ISSN 0704-3716

Canadian Translation of Fisheries and Aquatic Sciences

No. 5264 (Revised)

# Market for mussels in Europe

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Original title: Markedet for blaskjell i Europa

In: Fiskeriteknologisk Forskningsinstitutt Rapp. 1 (Prosjektnumber 673-15), 33 p., 1981

Original language: Norwegian

Available from:
Canada Institute for Scientific and Technical Information
National Research Council
Ottawa, Ontario, Canada K1A 0S2

1988

35 typescript pages

Secretary of State / Secrétariat d'État

90-02734/

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| LSM 6-00843 | Norwegian | JMK | |

REPORT: Market for Mussels in Europe.

AUTHOR: Steinar Eliassen.

SECTION: Economics.

EXTRACT:

The report considers the production of mussels in the most important producing countries in Europe, and export and import from/to the most important markets. The different groups of products - fresh, frozen and canned - and different product varieties will be discussed. The report's main conclusion is that an expansion of a Norwegian mussel industry must come about gradually and probably must be based on the somewhat protected domestic market. In this connection we include Sweden as a domestic market.



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## 2. GLOBAL MUSSEL PRODUCTION

An effort to study the size of the mussel production in Europe and in the rest of the world is met immediately with data problems. This can be attributed primarily to the fact that official statistics in Spain, the world's largest producer country, show figures totally different from those found in the unofficial sources. In 1979, e.g., official statistics determined the Spanish production to be 79 000 t, while most literature sources indicated that the production varied between 150 000 and 200 000 t in the 1970's.

Therefore, we prefer to assume that the official statistics are not correct. The same applies to FAO's figures for Spain. Besides, FAO has no statistics on common mussel production in the eastern Mediterranean region. There is reason to believe that, excluding Italy, the production is small in this region. P. Knorringa, the Dutch authority on the farming of the common mussel, claims, however, that the 1972 Italian production amounted to about 30 000 t, while FAO's figures indicate that the Italian production was insignificant. Therefore, there is reason to assume that the total 1979 production was somewhere between 400 and 450 000 t in Europe. Thus, the global annual mussel production can be estimated to lie at about 600 000 t live weight. FAO's figures, which can hardly be correct, are given below.

**Table 1 Global production of the common mussel (in 1 000 t)**

| | 1974 | 1975 | 1976 | 1977 | 1978 |
|---|---|---|---|---|---|
| Entire world | 376 | 467 | 481 | 517 | 502 |
| Europe *) | 285 | 315 | 255 | 297 | 303 |
| The rest | 91 | 147 | 223 | 243 | 199 |
| Korea's and Thailand's share of the latter | 41 | 102 | 161 | 171 | 144 |

*) Excluding Eastern Mediterranean

Source : FAO

According to FAO, the global production increased relatively strongly in 1974 - 1978 (about 33 %). The production was fairly stable in Europe during this period, hovering around a level of about

SUMMARY

World production of mussels can be estimated at about 600,000 tonnes, live weight, in 1979. Of this, circa two thirds, or about 400,000 tonnes, are produced in Europe. Spain, Holland, France and Denmark account for 80 - 90 % of this. Outside Europe, South Korea and Thailand are the most important producers. On Europe's Atlantic coast are cultivated and grown Mytilus edulis, in the Mediterranean, Mytilus gallaprovincialis, and in the tropics, Mytilus smaragdinus.

The countries in Europe that consume the largest quantities of mussels, are Spain and France. Spain is more than self-sufficient and exports significant quantities. France is the largest importer of live mussels in Europe, with Belgium the next largest. Holland is the most important exporter, Spain is second.

By reason of low prices, low durability and high transport costs for live mussels, it is unlikely that it will be possible to export fresh mussels from Norway to the Continent for direct consumption.

If we are to carry on mussel production in Norway, it must either be for internal consumption, or delivery to industry which would can or process the mussels one way or another. Today, probably as much as a hundred thousand tonnes of mussels are used by the canning industry in Europe. Spain and Denmark ha the largest production, Holland somewhat less. The trade in processed mussel products is difficult to map, since mussels in commercial statistics are included together with several types of molluscs. Since 1977, Denmark has increased its export of canned mussels

whilst Spain's has decreased. South Korea, towards the end of the seventies, has appeared as a significant supplier of frozen as well as canned mussels.

The markets for processed mussels have still very obvious limitations. This appears self-evident from the fact that the market for frozen mussel meat in Germany probably only consists of about 100 tonnes per year. In spite of the fact that as much as Holland's whole output in a normal year is canned, and that the market is large - or perhaps just because the quantity is so large - the competition is hard on the large, established markets. Small markets such as Sweden and Norway absorb a quantity equal to at least 7000 tonnes live mussels. As a comparison, Norway's production will barely amount to 500 tonnes in the 1981/82 season. In the beginning phase, therefore, the mussel industry ought not to overlook the significance the home market can have. This circumstance is even more important to take note of, since the prices that can be anticipated in Norway and perhaps also in Sweden, are higher than those that can be expected on the Continent. When there is talk of large quantities, it is an indisputable fact that mussels are a low-priced product, and it is precisely the price competition that can be the most difficult to deal with from the Norwegian point of view.

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| 2894140 | Norwegian | LT | 7/12-87 |


# Market for mussels in Europe

S. Eliassen

UNEDITED TRANSLATION
For information only
TRADUCTION NON REVISÉE
Information seulement

ISSN 0704-3716

FOREWORD

Work has been done for the last 15 - 20 years to get mussel production started in Norway. Because the common mussel converts plant plankton to highly valuable protein without expensive intermediaries, it is a fascinating idea to make better use of the mussel than what has been done in Norway up to now. Other countries, such as Spain, France, The Netherlands, and Denmark, learned to do this long ago.

This report is based on the idea that the culture and marketing of the common mussel, once production is started, will be profitable.

Thanks are due to all those in and outside Norway who supplied helpful information during the work.

The preparation of this report was aided by a grant of NOK 10 000 from the Mussel Committee.

Steinar Eliassen

## 1. AIM, METHODS, AND UNDERLYING DATA

This report aims to provide a rough overview of the existing possibilities of marketing mussels and mussel-based products from Norway.

The method selected is a form of analogical method : It is examined what product markets are vital today and assumed that the same conditions that apply to products from other countries will apply to Norwegian products as well. It is hoped that this will help to find niches (that is, protected markets for special products) that may prove profitable for Norway.

This market study can be characterized as a combined field and literature study, as its main impressions have been collected during stays and travels in France, Belgium, and The Netherlands, while it has been necessary to use written sources for supplementary information concerning other countries. The study concentrates on Europe, which is a natural consequence of that about 2/3 of the global mussel production, and even a greater portion of the global consumption, takes place in Europe.

Access to data concerning areas outside Europe has been difficult. The same is valid for Spain and all around the Mediterranean Sea. That data concerning Spain is poorly represented in the report is an obvious weakness, because Spain can be assumed to be the world's largest mussel producer, even though this is not confirmed by official statistics. Another problem during the work has been that few import and export statistics on processed mussel products are available.

The prices are indicated in Norwegian kroner (NOK). Conversions are based on the mean rates for currency sales on the Oslo Stock Exchange in the periods in question (years or months).

## 2. GLOBAL MUSSEL PRODUCTION

An effort to study the size of the mussel production in Europe and in the rest of the world is met immediately with data problems. This can be attributed primarily to the fact that official statistics in Spain, the world's largest producer country, show figures totally different from those found in the unofficial sources. In 1979, e.g., official statistics determined the Spanish production to be 79 000 t, while most literature sources indicated that the production varied between 150 000 and 200 000 t in the 1970's.

Therefore, we prefer to assume that the official statistics are not correct. The same applies to FAO's figures for Spain. Besides, FAO has no statistics on common mussel production in the eastern Mediterranean region. There is reason to believe that, excluding Italy, the production is small in this region. P. Knorringa, the Dutch authority on the farming of the common mussel, claims, however, that the 1972 Italian production amounted to about 30 000 t, while FAO's figures indicate that the Italian production was insignificant. Therefore, there is reason to assume that the total 1979 production was somewhere between 400 and 450 000 t in Europe. Thus, the global annual mussel production can be estimated to lie at about 600 000 t live weight. FAO's figures, which can hardly be correct, are given below.

**Table 1 Global production of the common mussel (in 1 000 t)**

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*) Excluding Eastern Mediterranean

Source : FAO

According to FAO, the global production increased relatively strongly in 1974 - 1978 (about 33 %). The production was fairly stable in Europe during this period, hovering around a level of about

300 000 t annually. Therefore, it is in the rest of the world that the production increase has taken place. It is difficult to know whether this increase is real or whether some of it can be attributed to improved collection of data, but at any rate, the increase has almost exclusively taken place in Korea and Thailand.

**Table 2 The most important European mussel-producing countries**

Figures in 1 000 t live weight

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|
| The Netherlands | 99 | 112 | 73 | 109 | 118 | 100 1) | 83 2) |
| Spain *) | | | | | | 170 | |
| France | 37 | 55 | 44 | 46 | 50 | 57 | |
| Denmark | 29 | 28 | 38 | 48 | 47 | 41 3) | |
| West Germany | 16 | 17 | 23 | 11 | 14 | 7 | |
| Great Britain | 6 | 7 | 7 | 11 | 7 | | |
| Others | 4 | 1 | 5 | 5 | 2 | | |

*) Official figures seem not to be reliable

1) Season 1978-79
2) Season 1979-80
3) January-October

All mussel production shows a relatively strong year-to-year fluctuation in individual countries. This applies to the common mussel as well and is associated with conditions pertaining to weather, spatting, nutrient supply, etc. E.g., the season ending in April 1980 was relatively poor in Holland, which was caused by excessive spatting in spring 1979, so that the young mussels practically deprived the adult mussels of food, with the result that the latter either died or became unfit for marketing in the season 1979-80.

France began to utilize the mussel banks off the eastcoast of Cotentin (The Channel) in 1977-78. These deposits are estimated to consist of about 30 000 t which can be caught at a price (about NOK 1.20/kg) very low in comparison with the price for mussel farmers (about NOK 3.50) in 1980-81.

The Spanish production is known to have varied very much in the recent years. According to the French opinion, the Spanish production could double when Spain gains access to the EEC market.

## 2.1 Production in The Netherlands

According to the FAO statistics, The Netherlands is the biggest producer of the common mussel in Europe.

**Table 3 The Dutch production**

| | | |
|---|---|---|
| 1976 | 64.000 | t |
| 1977 | 95.000 | |
| 1978 | 103.000 | |
| 1979 | 78.000 | |
| 1980 | 62.000 | |

Source : Dutch statistics, which show figures lower than those of the FAO.

The mussel production takes place on shallow banks off the Dutch coast. The farming consists primarily of transporting the common mussel seed from the natural breeding grounds (especially Waddenzee) to the banks with the most favorable growth conditions.

A total of about 90 licences have been granted for exploitation of the mussel grounds for which the government collects a basic rent. About 60 licences have been granted for the northern part of the country, while the remaining 30 are in the south, which is the old common mussel region, where the farming of the common mussel began at the mouth of Schelde in the first half of the 18th century.

The mussels are harvested by dredging with specialized vessels loading about 50 - 100 t.

The worst problem experienced by the Dutch mussel farmers is to make the mussels dispose of sand. To achieve this, the mussels are placed in special "parks", i.e., selected places in the sea.

All initial sales take place by auctions in Yerseke, southern Holland.

The Common Mussel Producers' Organisation sets the minimum prices and has, overall, organized the sales in an impressively stream-lined manner.

The 90 licence-holders deal (not all at the same time) with about 25 purchasors. Five of these are canning plants, while the rest deal in live mussels. The season lasts from September to April, and up to 3 000 t per day change hands during its peak.

In the last 2 - 3 years, a modest production of frozen mussel food has been started. In 1978, when the production amounted to about 100 000 t, the share of the canning industry was approx. 20 000 t, while the remaining 80 000 t was sold live.

The low prices of the Dutch common mussels are based on a very rational production and sales setup. In 1979-80, the minimum price for uncleaned mussel was about 50 Ore per kg. The fairly small production and the great demand had the consequence, however, that the price the purchasors were willing to pay was much higher. In the season 1979-80, the kilo price paid was about NOK 1.50, which the producers considered a very good price. In 1980-81 as well, the production was smaller than what it had been usually in the 1970s. However, the Dutch sales organisation responsible for all trade in the common mussel in the Netherlands expects that the Dutch mussel supply will be once more abundant in the season 1981-82.

Even though there is a growing domestic market for fresh mussels in the Netherlands, the production is based on exports.

## 2.2 Production in Spain

The farming of the common mussel began only after World War II. The farming takes place by means of floats swinging with the current and wind. The mussels adhere to ropes or cables hanging vertically from the floats.

The following table shows the development of the common mussel production in Spain in the 1970s. The figures, received from the Norwegian Embassy in Madrid, are those appearing in the official Spanish statistics.

**Table 4 Spanish production and average price**

| Year | Quantity in 1 000 t | Average price in Ore per kg (first-hand) |
|---|---|---|
| 1972 | 128 | 43 |
| 1973 | 142 | 50 |
| 1974 | 94 | 62 |
| 1975 | 93 | 58 |
| 1976 | 65 | 54 |
| 1977 | 61 | 80 |
| 1978 | 66 | 91 |
| 1979 | 79 | 138 |

FAO uses the same figures in its statistics. However, the Embassy reports that IIP, the Spanish Fisheries Research Institute, informs that the 1979 production was 170 000 t. Even though it is reasonable to assume that the factual production lies somewhere between the figures given, it is not possible to establish the size of the Spanish production with certainty.

However, what is certain is that the Spanish common mussel production suffered a strong setback in the mid-1970s, which was presumably caused by a sharp drop in the demand as a result of a 1973 cholera epidemic in parts of Spain, which was said to have the common mussel as its source. Thus, the figures supplied showed that the production dropped by more than a half in the course of the five years preceding 1979. It is also known that the Spanish frozen mussel producers have certain difficulties with selling their goods, as the purchasors fear lacking hygiene in the production process.

The Spanish production is mainly consumed by the domestic market, even though Spain is the second largest exporter in Europe.

## 2.3 Production in France

France is the third largest common mussel producer in Europe, with about 1/6 of the total European production in recent years. Table 5 shows the French production in 1975 - 1979.

**Table 5 French production**

| | |
|---|---|
| 1975 | 55.000 t |
| 1976 | 44.000 t |
| 1977 | 46.300 t |
| 1978 | 50.300 t |
| 1979 | 57.600 t |

Source : FAO and Marine Marchande, Paris.

It is claimed that an Irish seaman named Walton, who ran aground just north of La Rochelle in 1235, was the first to begin to farm mussels with the "bouchot". The bouchot, in its present form, refers to 4 - 6 m tall oak stakes with bark on, driven into sandy bottom in rows 50 - 100 m long, placed at such a level that they are dry at low tide. The stakes carry "stockings" or ropes to support the young mussels. The mussels are caught up in, or adhere to, coconut ropes stretched horizontally between two bouchot rows. The mussels reach a marketing size of 4 - 6 cm in 12 - 18 months. Mussels are also grown right on the bottom.

On the Mediterranean coast, mussels are farmed on ropes hanging vertically from racks (frequently made of steel). This methods is well suited for locations where there is not much difference between high and low tide.

In some parts of France, parasites may destroy up to 80 % of the production.

The 1979 increase can be largely attributed to the harvesting of wild mussels in the English Channel. Any further expansion is met with the problems created by a shortage of suitable locations.

As in the Netherlands, it is reported that different kinds of pollution do not result in difficulties for common mussel farming. (In oyster production, the role of pollution in the reduced production in some districts is much debated.)

Just about all of the mussels are consumed in France, and besides, France

imports more common mussels than any other country.

## 2.4 Production in Denmark

In Denmark, the common mussel is almost exclusively farmed in Limfjorden only. The mussels are cultivated on the bottom, which means that the sand has to be removed by means of a cleaning process. An essential part of the industry is based on harvesting wild mussels, even though initiatives have been made in recent years to start transporting young mussels the same way it is done in the Netherlands. The Danish mussels have a low yield of meat, only 8 - 10 %, which means that the Danish first-hand prices are the lowest in Europe (about 12 - 13 Ore per kg in 1979). Almost all of the quantity harvested goes to the canning industry. The biggest European mussel-producing canning plant is at Limfjorden.

The table below shows the production of live mussels in Denmark in the recent years.

**Table 6 Danish production**

| | |
|---|---|
| 1974 | 29.000 t |
| 1975 | 28.000 |
| 1976 | 38.000 |
| 1977 | 48.000 |
| 1978 | 47.000 |
| 1979*) | 41.000 |

*) The first 10 months
Source : FAO and the Norwegian Embassy, Copenhagen.

## 2.5 Production in other countries

Table 2 shows that West Germany had a significant production in some years, essentially based on the sales of young mussels to Holland to be farmed there to full size. The West German production was halved from 1978 to 1979 when it dropped from 14 000 to 7 000 t. This decline continued in the first half of the 1980s.

Great Britain's production, at 5 000 to 10 000 t a year is not insignificant either.

P. Korringa reports that Italy produced as much as 30 000 t in 1972. However, further data are missing.

The National Marine Fisheries Service reports that in 1979 the US east coast production amounted to 1 425 t common mussel meat (corresponding to 6 000 t live mussel). The sales value was about NOK 4 mill., which is equivalent to about NOK 2.80 per kg mussel meat.

No accurate information about the US west coast production is available. Had there been significant production in this region, it would have appeared probably in the FAO statistics.

## 3. EUROPEAN COMMON MUSSEL MARKETS

The common mussel markets in the major common mussel importing countries are characterized by consumption of fresh mussels, that is, the mussels have to be live when the consumer purchases them. However, it is difficult to determine exactly what percentage is sold live, because the present statistics on preserved mollusks (all sorts of mussels, squid, and octopus) are on the whole not very detailed.

Still, it can be determined that with the exception of Denmark, trade in mollusk preserves is relatively modest in comparison with the trade in live mussels.

In France, only insignificant quantitites are handled by the canning industry. The quantity that is frozen is probably just about zero. This is explained by the relatively high firsthand price (NOK 3.00 to 3.50 per kg). (As mentioned earlier, France has started harvesting wild mussels as well. However, as this began only in the latter half of the 1970s, these inexpensive mussels have given rise to no canning industry.)

In Holland, about 1/5 of the total quantity goes to the canning industry, while the production of frozen mussels started a few years ago and is very modest.

Information about Spain's production of canned common mussels varies very much. According to FAO statistics, the production used about 25 000 - 40 000 t of raw material in the period 1974 - 1977, while Korringa estimates this figure at 50 - 60 000 t per year.

Denmark is the only major producer country with a relatively large production of canned mussels. Its average exports of fresh mussels amounted to only 5 % of the total production in 1975 - 1978. This would mean a total of 90 - 130 000 t of live mussel for the canning industry from a total European production of 400 000 t per year. The remaining 300 000 t are thus used fresh.

It should be noted that a relatively significant loss takes place between the producer weight and the sold weight, even if the mussels are sold live. This is attributed to sorting, washing, water losses, etc. In other words, European consumers do not buy an annual quantity of 300 000 t but one that can be probably estimated to lie at a good 200 000 t.

## 3.1 Markets for fresh (live) mussels

**Table 7 Exports of live common mussels, by country of origin** (t)

| | 1978 | 1979 | 1980 | |
|---|---|---|---|---|
| The Netherlands | 46.500 | 43.500 | 12.300 | up to and including july |
| Spain | 15.600 | 15.600 | 12.500 | " october |
| Great Britain | 4.100 | 800 | 4.900 | " november |
| West Germany | 2.700 | 600 | 2.200 | " september |
| Denmark | 1.400 | not available | n.a. | |
| Ireland | 1.100 | 1.200 | 800 | " september |
| Italy | 800 | 700 | 600 | " august |
| France | 600 | 1.000 | n.a. | |

The dominant exporters are the Netherlands and Spain, and their figures show small changes from 1978 to 1979. However, in the first seven months

of 1980, the Dutch exports experienced a quantity decline of 37 % in comparison with the same period of the previous year. In 1980, Spain had a volume increase of 8 %, in comparison with the first ten months of 1979. The two countries had price increases of 42 % and 15 %, respectively.Exports increased strongly in Great Britain and West Germany in 1980, but prices dropped with 67 % and 24 %, respectively. This indicates that mussels from these countries were used for further production in the Netherlands. The same thing has happened with mussels from Denmark.

France and Belgium are the major consumers of the common mussel in Europe. While about half of the quantity consumed by the French (a total of about 80 000 t) is produced in France, Belgium has no production of its own and imports just about all from the Netherlands.

**Table 8 Common mussel imports to the EEC, by country** (t)

| | 1978 | 1979 | 1980 | | |
|---|---|---|---|---|---|
| France | 38.500 | 23.600 | 23.000 | to end Nov. | (+17 %) |
| Belgium/Lux. | 22.000 | 21.800 | 7.300 | " July | (+18 %) |
| Italy | 7.700 | 7.000 | 4.100 | " Aug. | (+23 %) |
| Germany | 1.700 | 7.000 | 4.100 | " Sep. | (+99 %) |
| Great Britain | 1.300 | 1.200 | 1.100 | " Nov. | (+ 8 %) |
| The Netherlands | 500 | 1.100 | 1.000 | " July | (+262%) |
| Denmark | 0 | 0 | 0 | | |
| Ireland | 0 | 0 | 0 | | |
| Totals | 71.800 | 61.700 | 40.600 | | (+25 %) |

Sources : Nimexe and European Supplies Bulletin (ESB).

The parenthesized figures indicate the rate of change in comparison with the corresponding 1979 figures. Development was stable in the period 1975-1978, while a notable decline in the quantity imported took place in 1979. The provisional figures for 1980 show that the quantity imported has again increased, but comparisons are difficult, because the figures apply to different periods in the different countries.

## 3.2 Market in France

France is the biggest importing country.

**Table 9 French imports of the common mussel**

| | Totally | The Netherlands | Spain | Breat Britain | West Germany |
|---|---|---|---|---|---|
| 1975 | 40.400 t. | 28.700 t. | 7.500 t. | 1.800 t. | 1.800 t. |
| 1976 | 26.200 t. | 18.330 t. | 4.700 t. | 1.200 t. | 1.400 t. |
| 1977 | 34.500 t. | 19.300 t. | 7.100 t. | 6.200 t. | 1.000 t. |
| 1978 | 38.600 t. | 22.500 t. | 8.600 t. | 4.000 t. | 2.400 t. |
| 1979 | 23.600 t. | 13.200 t. | 8.600 t. | 900 t. | 0 |
| 1980 | 27.500 t. | - | - | - | - |

Source : Nimexe

The small 1976 imports can be attributed to that the production was small in the Netherlands this year and that Spain had major problems with contaminated mussels.

In general, it can be noted that French consumers are conservative about food. Fresh goods are still absolutely preferred. The common mussel is eaten mostly au naturel. It is cooked in its own shell, and it must be alive at the time the consumer buys it.

The French households increased the volume of their fresh common mussel consumption by 12 % from 1978 to 1979, according to a major consumer study. The total quantity consumed by households amounted to a good 60 000 t. The retail prices increased from 1978 to 1979 by 12 %, and the average retail price amounted to NOK 5.75 per kg.

The quantity consumed in restaurants and similar can be estimated, on the basis of figures for domestic production, imports and exports, to lie at about 20 000 t. This indicates a notable decline from the year before, when the corresponding figure was 34 000 t.

**Table 10 Combined consumption in France**

| | 1978 | 1979 |
|---|---|---|
| Domestic production | 50.300 | 57.600 |
| Import | 38.600 | 23.600 |
| Export | 600 | 1.000 |
| For consumption | 88.300 | 80.200 |
| Consumed in homes | 54.100 | 60.400 |
| Consumed in restaurants and similar | 34.200 | 19.800 |

It can be questioned whether the common mussel consumption in the collective market really declined as drastically as Table 10 indicates. Because a study of at-home consumption is a selective study and because it was carried out the first time in 1978, it can not be excluded that the study contains some inaccuracies. It is also possible that all direct sales of wild mussels were not recorded.

In 1979, the annual per capita consumption of fresh common mussel in France amounted to about 1.5 kg.

### 3.3 Market in Belgium/Luxembourg

Belgium is the second biggest importing country in Europe. Even though Belgians themselves do not, on the whole, produce common mussels, they eat more mussels than the Dutchmen do, who are big producers. Mussels are consumed in the same manner as in France, which is in many ways comparable with the manner shrimps are eaten by Scandinavians, as an "enjoyable, genial" food.

**Table 11 Imports to Belgium/Luxembourg**

| | | Out of which, from the Netherlands |
|---|---|---|
| 1975 | 20.800 tonnes | 20.400 t. |
| 1976 | 20.200 " | 19.700 t. |
| 1977 | 24.000 " | 23.900 t. |
| 1978 | 22.000 " | 21.900 t. |
| 1979 | 21.700 " | not available |

Source : Nimexe

Belgium has no common mussel production of its own and no export. The per capita consumption lies at about 2.0 kg.

3.4 Markets in other EEC countries

The other seven EEC countries import fresh mussels to a significantly smaller extent.

**Table 12 Imports to other EEC countries**

| | EEC, excl. France and Belgium | Holland's share | Italy's share | Germany's share | Great Britain's share |
|---|---|---|---|---|---|
| 1975 | 17.300 | 6.200 | 6.200 | 2.300 | 1.000 |
| 1976 | 28.000 | 19.300 | 4.700 | 2.600 | 1.200 |
| 1977 | 11.200 | 2.800 | 5.500 | 1.800 | 900 |
| 1978 | 11.200 | 500 | 7.700 | 1.700 | 1.200 |
| 1979 | 16.300 | 1.100 | 7.000 | 7.000 | 1.200 |
| 1980 | - | 1.000[1)] | 4.000[2)] | 4.100[3)] | 1.200[4)] |

1) Jan - July + 262 % of that in the same period in 1979
2) Jan - Aug + 23 % "
3) Jan - Sep + 99 % "
4) Jan - Nov + 8 % "

It can be seen that imports to these countries were relatively large in 1975 and 1976, which is explained by that the Netherlands imported quite big quantities of "small mussels" from West Germany to farm them to a commercial size. Their price was hardly 1/4 of what the Belgians paid on an average for their imports.

A strong increase can be seen in the West German imports in 1979 and 1980.

This is explained by a major reduction in West Germany's own production. Ireland and Denmark imported insignificant quantities.

Remarkable enough, the consumption of fresh common mussels is smaller in the Netherlands than e.g. in Belgium. According to the Morsel Office, Bergen-Op-Zoom, the domestic consumption was 9 000 t in 1979, which corresponds to 600 - 700 g per person.

### 3.5 Canned common mussel - Common mussel as semi-preserve

It has been difficult to get hold of statistics on the different countries' production of preserved common mussel, because the common mussel is listed under the combined heading "Mollusks". This applies to the FAO statistics as well, concerning mussel production in the different countries. However, this provides at least some tangible information, which can lead to interesting conclusions if combined with market information of a more general nature.

The collective term "Canned common mussel" includes all the different sauce variants etc.

The FAO statistics mention only five European countries with a significant production of canned mollusks.

**Table 13 Canned mollusks, in 1 000 t, net product weight**

| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 |
|---|---|---|---|---|---|---|---|
| Belgium | | | 0,1 | 0,1 | 0,1 | 0,5 | 0,4 |
| Denmark | 4,3 | 4,4 | 4,3 | 4,9 | 7,2 | 7,4 | 9,2 |
| The Netherlands | 2,2 | 2,6 | 3,2 | 3,9 | 3,0 | 4,1 | 5,9 |
| Portugal | 2,3 | 1,6 | 1,2 | 0,4 | 1,0 | 1,0 | 1,0 |
| Spain | 15,0 | 17,9 | 18,6 | 16,3 | 17,1 | 14,0 | 14,0 |
| Spain common mussel | 6,3 | 8,5 | 9,7 | 8,7 | 8,1 | 5,9 | |

The table includes Spain's production of canned common mussel. It is known that Denmark also hardly exports canned mollusks other than the common mussel; at least they are not known in the markets. Further, the Dutch catch of mollusks other than the common mussel is known to have amounted

to somewhere between 1 and 3 °/oo of the common mussel production (about 100 t against about 100 000 t) in 1976 - 1978. On the basis of these facts, it can be concluded that figures on canned mollusks can be used just about synonymously with those on canned common mussels as far as Denmark and the Netherlands are concerned.

Table 13 indicates that production increased strongly in these two countries in 1972 - 1978; 114 % in Denmark and 168 % in the Netherlands. In Spain, the 1977 production was 6 % lower than the 1972 production and as much as 64 % lower than the peak in 1974. It seems that the strong increase in production in Denmark and the Netherlands in the period 1974 - 1977 was balanced by a correspondingly declining production in Spain.

The following table shows the export figures of the last 2 - 3 years for Spain and Denmark, the biggest producers.

**Table 14 Export of processed common mussel (Mussel preparations)**

Figures in t, prices in NOK/kg

Denmark

| | Quantity | Price | Change in quantity from year before, % |
|---|---|---|---|
| 1977 | 5356 | 7,35 | |
| 1978 | 6676 | 8,59 | +24,7 |
| 1979 | 7576 | 9,06 | +13,0 |
| 1980/ jan-sept. | 6190 | 8,95 | +20,0 |

Spain

| | | | |
|---|---|---|---|
| 1977 | 4780 | 6,81 | |
| 1978 | 3737 | 9,40 | -21,8 |
| 1979 | 2324 | 16,94 | -38,0 |
| 1980/ jan-oct. | 1995 | 11,87 | +15,0 |

Source : European Supplies Bulletin, Edinburgh

Denmark is seen to have experienced an even and strong increase in

the quantity exported, i.e., an increase of about 20 % annually in the last three years. Price increases were moderate, only about 22 % from 1977 to 1980. During the same time period, the wholesale price index for foods rose by 21 % in Norway.

In Spain, price increases were bigger, and the Spanish common mussel canning was last year about 33 % more expensive than the corresponding Danish canning, while in 1977 it had been 8 % less expensive. Also, Spain lost a big share of the mussel preparation market in the course of 1978 and 1979. In these years, the Spanish exports experienced a decline that was greater than the increase experienced by Denmark. Last year, this trend broke, and in the first ten months the Spanish exports grew by 15 %, while the prices, according to ESB, dropped sharply from those of the year before.

Because figures on the Dutch mussel preparation exports are missing, it is difficult to judge how the total European markets for prepared mussels have developed. However, it is known that in the last two seasons (Sep-Apr), the Dutch common mussel production was about 20 % smaller than earlier in the 1970s. Furthermore, the combined heading in the export statistics, under which prepared common mussels appear, has experienced a drop of about 15 % in each of the last few years.

To illustrate the import market development, the table below shows figures on imports of mollusks to France. "Mollusks" must not be interpreted as referring to the common mussel only, but still, the figures provide some indications.

**Table 15 Imports of canned mollusks to France**

| | Total | Denmark's share | Spain's share | South Korea's share |
|---|---|---|---|---|
| 1976 | 4.823 | 1.937 | 2.384 | |
| 1977 | 5.850 | 2.453 | 2.819 | 0 |
| 1978 | 5.629 | 2.534 | 2.284 | 189 |
| 1979 | 6.522 | 3.043 | 1.708 | 1.096 |

Source : The Customs and Excise Directorate of France

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Information seulement

The imports increased totally with 35 % from 1976 to 1979.
It is seen that Denmark has obtained market shares from Spain. However, it is difficult to extract much information from these total quantities, since Denmark almost exclusively produces canned common mussel, while Spain produces and probably also exports a number of different canned mollusks. It can be established that the average kilo price from Denmark rose with about 35 % in the period in question, while the same price from Spain rose by about 125 % and was, at the end of the period, more than 60 % higher than that of Denmark (about NOK 14/kg).

On the other hand, the statistics indicate that South Korea has stepped in as a significant seller of canned mollusks. The imports increased from zero to more than 1 000 t from 1977 to 1979.
The average 1979 kilo price of mollusks imported from South Korea was 15 % lower than Denmark's price.
It is known in general that it is the importation of the more expensive seafood that has increased in France in the recent years (among mollusks, scallops and Iceland scallops). The available figures do not allow a determination of the extent to which this increase can be attributed to increased imports of the common mussel or of whether the market for canned common mussel has increased in France. Otherwise, the trend indicated by the figures agrees with what has been stated above about Denmark's and Spain's exports.

### 3.6 Frozen common mussel

Trade in frozen common mussel has been very modest, and the statistics do not contain separate headings for it. Additionally, the headings found can not be interpreted with certainty.

However, both producers in the Netherlands and importers in France think that the product has a future. What then are the possibilities and the restrictions that markets for frozen mussels can be assumed to encounter ?

Frozen mussels have the principal advantage that frozen foods will generally find increasing acceptance. The use of frozen foods is increasing, while that of canned goods stagnates, according to most sources related to

trade in foodstuffs.

As we are able to produce mussels of the very top quality, so that ours are the best in the market, we can expect to achieve higher prices than our competitors.

However, a look at the uses of frozen mussels will reveal that there are limits to this higher price. Contrary to live mussels which are eaten as an independent dish, frozen mussels are used essentially to flavor sauces and special dishes such as paella, which means that the quality of the mussel can be "hidden" to some extent. Therefore, the quality of the common mussel is not as important as that of the oyster, scallop, or sea urchin, with the result that there are limits to what the consumer wants to pay for a quality mussel. This fact will make itself even more applicable if great quantities are to be sold.

Today, quite good supplies of frozen common mussel from South Korea are available in Europe. The prices are very low : about NOK 8/kg in European port. It is not improbable that a Norwegian quality mussel could fetch twice this price, while it is reasonable to assume that the quantity that can be sold at this price will be limited. "Limited" means that it will not be possible to sell 100 t in a year "without difficulty". This is based on the assumption that the total West German market for frozen common mussel is 100 t. It can also be assumed that bigger quantities can be sold if the quality is improved and the price lowered further.

## 3.7 Other common mussel products

This chapter deals with other common mussel variants known to the author. The list below probably does not cover everything found in the market.

### Stuffed mussels

Stuffed mussels are known particularly in France, where "moules farcies" refers to cooked common mussels on the half shell, surrounded by a mixture most often consisting of butter and garlic. The mussels are delivered partly from the Netherlands and Ireland and partly from Spain in trays of 9 or 12 mussels each. They are frozen. The price of these mussels purchased from a wholesaler in Paris is NOK 0.67 each for medium and NOK 1.03 each for large Spanish mussels.

The quantity turned over is probably small, possibly amounting only to some tens of tonnes for entire Europe. This product is also the most expensive common mussel product known, which will have to be taken into consideration when products are selected for an eventual new mussel industry.

Seafood burger

In Spain, where the raw material supplies are quite good, ideas have emerged about using the common mussel to produce "hamburgers" based on mussel meat. In London alone, there is a weekly market for 240 t of hamburgers. The same idea is known to have appeared in other circles as well, e.g. in connection with the use of minced cod for various meat-like products or for new fish products. Market analyses have not been carried out for either product group. Thus, it is characteristic that the Spaniards see northern Europe as a potential market, while we prefer to think of the Mediterranean countries as our market.

Albondigas - Salchichas

Albondigas refer to fishballs and salchichas to sausages. The meat of the common mussel could form the basis for these types of products, some of which may already exist. Here belong also the various forms of smoked common mussel "snacks".

3.8 Domestic market for processed common mussel

Norway - Sweden - Finland

Very small quantities of live mussels are turned over in Norway and Sweden. Due to the absence of customs barriers, it is natural to include Sweden and Finland in the domestic markets for seafood.

Ekse (10) reports that his wholesale company persuaded from 1972 to 1974 the Oslo market to take 400 kg of live mussels by the end of the period. After a 1974 event involving toxic mussels, all clients dropped out. On the basis of his experience Ekse assumes that the domestic markets could turn over a total of about 1 000 t of common mussel, live weight, in 3 - 5 years. He thinks that this total would include about 10 %

fresh mussels (100 t), 40 % semi-preserves (100 t finished product), and 50 % frozen or canned (125 t finished product).

The prices given by Ekse are as much as 30 - 50 % higher than those achieved on the big European markets (France). Ekse's calculations seem to be reasonable in view of that Norway imported about 140 t of canned common mussel in 1980.

According to Ref. No. 11, Sweden imported almost 1 500 t of canned common mussel in 1976.

Figures on Finland's imports were not available.

The prognoses for possible sales in Norway, combined with the present Swedish imports, indicate that the domestic market absorbs significant quantities. The quantities seem particularly impressing, if they are compared with Norway's production capacity today and in the nearest future. The total markets of Norway and Sweden amount probably to at least 7 000 t live weight. At the same time, it is obvious that the entire Norwegian common mussel production in the season 1981 - 1982 will hardly amount to even 500 t.

It is always difficult for inexperienced producers to enter new markets. The difficulties are hardly alleviated by protection of markets by tariff , transport, and language barriers. Therefore, it will not be very clever to underestimate the domestic market in connection with the establishment of market strategies for Norwegian common mussel products.

## 4. PRICES

### 4.1 Firsthand prices

The common mussel is an inexpensive merchandise.

In Denmark, the prices obtained by producers of fresh common mussel must be characterized as depressingly low - at least in view of the Norwegian desire to enter the competition.

**Table 16 Danish producer's prices**

| | 1977 | 1978 | 1979 |
|---|---|---|---|
| DKK per kg | 0,10 | 0,11 | 0,127 |

French sources report that in Spain, where mussels are much larger and have a quality much more in demand, the price amounts to about NOK 0. 50 per kg for canning plants and about NOK 1.40 per kg for fresh use, in spring 1979. The official Spanish statistics are based on an average first-hand price of NOK 1.38 per kg in 1979.

The Dutch minimum prices, fixed by the sales organisation, was about NOK 0.50 for the season 1979/80, while the average price obtained by the producers in the season was about NOK 1.50. All producers characterized this price as very high. (In the season 1978/79, the price was 0.90.)

In Great Britain, the firsthand price was about NOK 0.40 per kg in 1978.

In France, the firsthand prices are definitely the highest among these four producer countries. In the last couple of years, the prices of the farmed mussel (bouchot) have ranged from about NOK 3 to 3.60 per kg. However, harvesting of "wild" common mussels also started in the last few years. Their prices have been considerably lower, at about NOK 1.20 per kg. The fairly good supply of inexpensive mussels from the fishing industry has resulted in a depression of the price level of the French farmed mussel all the way to the 1980/81 season, after which the small supplies of Dutch mussels resulted in price increases for the bouchot as well.

## 4.2 Wholesale prices of fresh mussels

A comparison of fresh mussel prices at the Rungi fish market outside Paris (the largest wholesale fish market in Europe) shows that from April 1979 to March 1980, mussels from different countries underwent different price developments.

**Table 15 Wholesale prices (NOK) in Rungi fish market, Paris**

| | April 1979 | April 1980 | March 1981 |
|---|---|---|---|
| Spanish | 6,10 - 6,50 | 6,10 - 6,50 | 6,00 - 6,40 |
| French, bouchot | 4,70 - 5,30 | 4,50 - 5,30 | 5,40 - 5,90 |
| Dutch | 2,10 - 2,60 | 2,70 - 3,50 | 2,40 - 4,10 |
| French, wild | | | 3,00 - |

During the last three years, the Spanish mussels have had quite stable prices on the whole (in terms of NOK, which has risen in value in comparison with FRF). In real terms, there has been a decline in prices. The Dutch mussels have experienced an even price increase, which is probably related to that the quantity that Holland is able to offer has been reduced in the last couple of years. Thus, the demand for the French farmed mussel has grown, and their price has increased. By March 1981, the bouchot just about stopped to be supplied, and French wild mussels with a low price entered the market.

The table shows that the price of the Spanish mussels is about double that of the Dutch mussels. The Spanish mussels, at 8 - 10 cm, are significantly larger than the Dutch ones. If mussels are grown on ropes hanging from floats, they do not touch sand, and the consumer is not faced with the risk of getting sand in his mouth. The Spanish mussels must be kept in tanks for some time in France before they are sold, while the Dutch mussels can be sold immediately. Therefore, the Spanish ones are more expensive.
It is self-evident that the wholesale price includes freight, packing, and wage costs + the exporter's and importer's/wholesaler's profits.
Also, a customs duty of 7.5 % is imposed on the Spanish mussels.

## 4.3 Wholesale prices of processed mussels

An importer at Rungi's reported that he paid about (Currency not mentioned. Transl. note) 19 per kg CIF for canned common mussel from Denmark in spring 1980. In April 1980, frozen mussels from Korea were offered in the same place for about NOK 7.70 per kg CIF, while Danish mussels cost NOK 16 - 18 per kg.

In spring 1981, the import price of frozen mussels to West Germany varied between NOK 7.50 and NOK 25 per kg.

The export prices of processed mussels from Denmark and Spain were, in the first 3 quarters of 1980, NOK 8.95 and NOK 11.87 respectively. In terms of NOK, these prices meant a certain decline from the year before. Such mean figures are, however, difficult to interpret.

### 4.4 Tariff rates

The tariff rates for export of Norwegian common mussel to EEC are

| | |
|---|---|
| for fresh and frozen | 10 % |
| for canned | 20 %. |

It is true that the rates are so high that they will bar the sale of processed mussels from Norway to EEC. A production, which otherwise would have resulted in a margin of 10 or 20 %, results with these rates in zero. A lower profit margin would simply mean unprofitable production.

Today, it is prohibited to import live mussels from Norway to Belgium and France (possibly to other countries as well) for direct consumption, because the Norwegian control measures for live mussels have not been approved by the corresponding authorities of these countries.

In cases where exemptions are granted for importing given quantities, the delivery has to carry a label (étiquette de salubrité) issued by Institut des Peches Maritimes, Nantes (see Encl. 1).

## 5. FUTURE PROSPECTS

The information presented above should show that the common mussel is not a luxury product. If Norway is to be competitive, the competitiveness must cover the price as well, even if Norway should have the best quality mussels.

Little can be said about the future development of the mussel production in Spain. It seems that Spain has fairly abundant mussel supplies.

In the Netherlands, the production has dropped by about 20 % in each of the last two seasons, in comparison with the average of the 1970s. However, mussel production fluctuates normally fairly strongly from year to year. Therefore, it is not improbable that the Netherlands again strongly increases its production as early as in the next season.

The West German production declined even more than the Dutch, namely by 50 % from 1978 to 1979, in relative figures. If this is also a temporary decline, it can be expected that the present high demand for the common mussel could disappear.

The Danish Limfjord, where almost all Danish common mussel production takes place, is being shaken by a mercury scandal. At the moment, little is known about how and if this will effect Denmark's competitive chances.

Japan is the global leader in seafood consumption, and it is to be believed that it could constitute a market for the Norwegian common mussel as well. However, according to Korringa, the common mussel is looked upon as non-seafood and is, on the whole, not eaten at all. Korringa also thinks that it is under warmer skies, e.g. in the Philippines, that it would be profitable to grow the common mussel on a scale larger than the present.

Yugoslavia plans to start common mussel farming on an industrial scale i.a. with intent to supply several European markets (acc. to Fishing News International).

Even though certain product variants of the common mussel fetch high prices in the European market, the quantities of these special products that can be expected to be sold are very small. Therefore, it is possible to draw the conclusion that should a common mussel industry be established in Norway, efforts must be made in the first place to work on the domestic market as well as Sweden and Finland, which may regarded almost as part of the domestic market.

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# RAPPORT

RAPPORTNUMMER: 1

TILGJENGELIGHET: Åpen

| RAPPORTENS TITTEL | DATO |
|---|---|
| Markedet for blåskjell i Europa | Mai 1981 |
| | ANTALL SIDER OG BILAG: 29 |
| SAKSBEHANDLER / FORF: STEINAR ELIASSEN | ANSV. SIGN. |
| SEKSJON: Økonomi | PROSJEKTNUMMER: 673-15 |

| OPPDRAGSGIVER | OPPDR.GIVERS REF. |
|---|---|
| | |


EKSTRAKT

Rapporten tar for seg produksjon av blåskjell i de viktigste produsentland i Europa og eksport og import fra/til de viktigste markedsland. De forskjellige produktgrupper - ferske, frosne og hermetiske - og forskjellige produktvarianter blir diskutert. Rapportens hovedkonklusjon er at en oppbygging av en norsk blåskjellnæring vil måtte skje gradvis og trolig måtte baseres på det tross alt noe skjermede hjemmemarked. I denne sammenheng regnes også Sverige som hjemmemarked.



3 STIKKORD

- blåskjell
- sjøprodukter
- markedsundersøkelse

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SAMMENDRAG.

Verdensproduksjonen av blåskjell kan anslås til ca 600.000 tonn levende vekt i 1979. Av dette produseres ca 2/3 eller omkring 400.000 tonn i Europa. Spania, Nederland, Frankrike og Danmark står igjen for 80 - 90% av dette.
Sør-Korea og Thailand er de viktigste produsentland utenfor Europa. På Europas atlanterhavskyst dyrkes og vokser Mytilus Edulis, i Middelhavet Mytilus Gallaprovincialis og i tropiske strøk Mytilus Smaragdinus.

De land i Europa som konsumerer størst kvanta blåskjell, er Spania og Frankrike. Spania er mer enn selvforsynt og eksporterer betydelige kvanta. Frankrike er største importør av levende skjell i Europa mens Belgia er nest største importør. Nederland er viktigste eksportland, Spania nr. 2.

På grunn av lave priser, kort holdbarhet og høye transportkostnader på levende skjell, er det usannsynlig at det vil være mulig å eksportere ferske skjell fra Norge til kontinentet for direkte konsum.

Skal vi drive skjellproduksjon i Norge må det derfor enten være til innenlandsk konsum eller til industri som konserverer eller bearbeider skjellene på en eller annen måte. I dag anvendes trolig så mye som 100 tusen tonn blåskjell til konserves industrien i Europa. Spania og Danmark har størst produksjon, Nederland noe mindre. Handelen med bearbeidede blåskjellprodukt er vanskelig å kartlegge, siden blåskjell i handelsstatistikker inngår i samleposter for flere sorter bløtdyr. Siden 1977 har Danmark økt sin eksport av konservert blåskjell mens Spanias har gått tilbake. Sør-Korea er på slutten av 70-tallet kommet inn som en meget betydelig leverandør av såvel frysekonserverte som hermetiske skjell.

Markedene for bearbeidede skjell har enda sine meget klare begrensninger. Dette fremkommer tydelig fra det faktum at markedet for frossen blåskjellmat i Tyskland trolig bare utgjør ca 100 tonn pr.år. Til tross for at så mye som hele Nederlands produksjon i et normalår, blir konservert og at markedet er stort- eller muligens nettopp på grunn av at kvantumet er så

Små marked som Sverige og Norge tar på sin side et kvantum som tilsvarer minst 7000 tonn levende skjell. Norges produksjon vil til sammenligning neppe bli så mye som 500 tonn i sesongen 1981/82. I startfasen bør derfor ikke blåskjellnæringa overse den betydning som hjemmemarkedet kan ha. Dette forhold er enda viktigere å merke seg siden prisene som kan forventes i Norge, og kanskje også i Sverige, er høyere enn det en kan regne med å oppnå på kontinentet. Når det blir snakk om store kvanta står det nemlig fast som et uomtvistelig faktum at blåskjell er et lav-pris produkt, og nettopp priskonkurransen kan bli den som er vanskeligst å klare fra norsk side.